

MTS-3181US

- 2 -

*Concluded
C1*

Consequently, it is possible to provide the ink-jet recording head capable of drawing an image of high quality.

IN THE CLAIMS:

Please amend the claims as follows:

*C2
Sub P3*

1 1. (As Amended) An ink-jet recording head comprising at least one
2 piezoelectric block having (a) an ink pressure chamber communicating with a
3 nozzle for ejecting ink supplied from an ink supply, (b) a partition wall serving
4 as a driving portion that includes a piezoelectric element and at least two
5 electrodes for driving said piezoelectric element, (c) a pressure buffer chamber,
6 and (d) two fixed walls,

7 wherein said ink pressure chamber, said partition wall and said pressure
8 buffer chamber are respectively arranged in sequence along a thickness
9 direction of said piezoelectric block, and

10 one of said fixed walls is disposed adjacent to said ink pressure chamber
11 and another of said fixed walls is disposed adjacent to said pressure buffer
12 chamber.

*Sub D1
C3*

1 3. (As Amended) An ink-jet recording head comprising at least one
2 piezoelectric block having (a) first and second ink pressure chambers, each
3 pressure chamber communicating with a nozzle for ejecting ink supplied from
4 an ink supply, (b) first and second partition walls, each partition wall serving as
5 a driving portion for one of the two ink pressure chambers, each partition wall
6 including a piezoelectric element and at least two electrodes for driving said
7 piezoelectric element, (c) a pressure buffer chamber, and (d) first and second
8 fixed walls,

9 wherein the first ink pressure chamber, the first partition wall, said
10 pressure buffer chamber, the second partition wall and the second ink pressure

MTS-3181US

- 3 -

D1
Conceded
C3

11 chamber are arranged in sequence along a thickness direction of said
12 piezoelectric block,

13 said first fixed wall disposed adjacent to said first ink pressure chamber
14 and said second fixed wall disposed adjacent to said second ink pressure
15 chamber, and

16 the piezoelectric block is an integrally sintered one piece block
17 structure.

64 Sub
F3

1 5. (As Amended) The ink-jet recording head as set forth in claim 1,
2 wherein said piezoelectric block is a block molding molded integrally by
3 baking powder including a piezoelectric material.

65 Sub
F3

1 39. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein said piezoelectric block is a block molding molded integrally by
3 baking powder including a piezoelectric material.

64
Sub
F3

1 44. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein said piezoelectric block is repeatedly arranged in the thickness
3 direction, or in a direction perpendicular to the thickness direction.

1 45. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein said piezoelectric block is repeatedly arranged in the thickness
3 direction, and in a direction perpendicular to the thickness direction.

1 46. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein at least two piezoelectric blocks are integrated with each other by
3 baking.

1 47. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein at least two piezoelectric blocks are welded to each other via an
3 adhesive.

1 48. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein at least two piezoelectric blocks are arranged on a predetermined base
3 member without being welded to each other.

MTS-3181US

- 4 -

1 49. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein a piezoelectric block assembly composed of at least two piezoelectric
3 blocks integrated with each other by baking is welded to another assembly
4 composed of at least two piezoelectric blocks integrated with each other by
5 baking or is welded to said piezoelectric block via an adhesive.

1 50. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein an assembly composed of at least two piezoelectric blocks integrated
3 with each other by baking is arranged on a predetermined base member without
4 being welded to another assembly composed of at least two piezoelectric
5 blocks integrated with each other by baking or to said piezoelectric block.

1 51. (As Amended) The ink-jet recording head as set forth in claim 1,
2 wherein a length of said fixed walls in the thickness direction is greater than
3 that of said partition wall in the thickness direction.

1 52. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein a length of said fixed walls in the thickness direction is greater than
3 that of said partition wall in the thickness direction.

1 54. (As Amended) The ink-jet recording head as set forth in claim 1,
2 wherein each of said fixed walls includes a portion firmer than said partition
3 wall.

1 55. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein each of said fixed walls includes a portion firmer than said partition
3 wall.

1 57. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein each of said fixed walls includes a hollow portion.

1 60. (As Amended) The ink-jet recording head as set forth in claim 42,
2 wherein each of said electrodes has a mesh-like structure.

1 76. (As Amended) The ink-jet recording head as set forth in claim 3,
2 wherein a distance between said nozzles is constant in the thickness direction.

Conceded
C4
Sub
F3/

CF
Sub
F3/

Sub
F3/

Sub
F3/

C40
Sub
F3/

MTS-3181US

- 5 -

1 77. (As Amended) The ink-jet recording head as set forth in claim 45,
2 wherein m nozzle alignments, in which said nozzles communicating with said
3 ink pressure chambers are aligned in an arbitrary number in the same direction
4 as the moving direction of said ink-jet recording head in an ink-jet printer, are
5 arranged in a direction perpendicular to the moving direction,

6 said nozzles are aligned without any overlapping in the direction
7 perpendicular to the moving direction, and $X = P/m$

8 wherein X represents a deviation between said nozzles nearest each
9 other out of said nozzles in reference to the moving direction, m represents an
10 integer number of nozzles, and P represents a distance between said nozzles
11 belonging to said same nozzle alignment.

Please add new claims 81 and 82, as follows:

1 81. (Newly Added) An ink-jet recording head comprising at least one
2 piezoelectric block having (a) first and second ink pressure chambers, each
3 pressure chamber communicating with a nozzle for ejecting ink supplied from
4 an ink supply, (b) first and second partition walls, each partition wall serving as
5 a driving portion for one of the two ink pressure chambers, each partition wall
6 including a piezoelectric element and at least two electrodes for driving said
7 piezoelectric element, (c) a pressure buffer chamber, and (d) first and second
8 fixed walls,

9 wherein the first ink pressure chamber, the first partition wall, said
10 pressure buffer chamber, the second partition wall and the second ink pressure
11 chamber are arranged in sequence along a thickness direction of said
12 piezoelectric block,

13 said first fixed wall disposed adjacent to said first ink pressure chamber
14 and said second fixed wall disposed adjacent to said second ink pressure
15 chamber, and

MTS-3181US

- 6 -

- 16 * surfaces of the two electrodes are oriented perpendicular to the thickness
17 direction, the driving portion is polarized in the thickness direction and
18 perpendicular to the surfaces of the electrodes.

p 13
12

- 1 82. The inkjet recording head of claim 81, wherein the piezoelectric
2 block is an integrally sintered one piece block structure.

Thickness direction - aligning direction
of nozzles